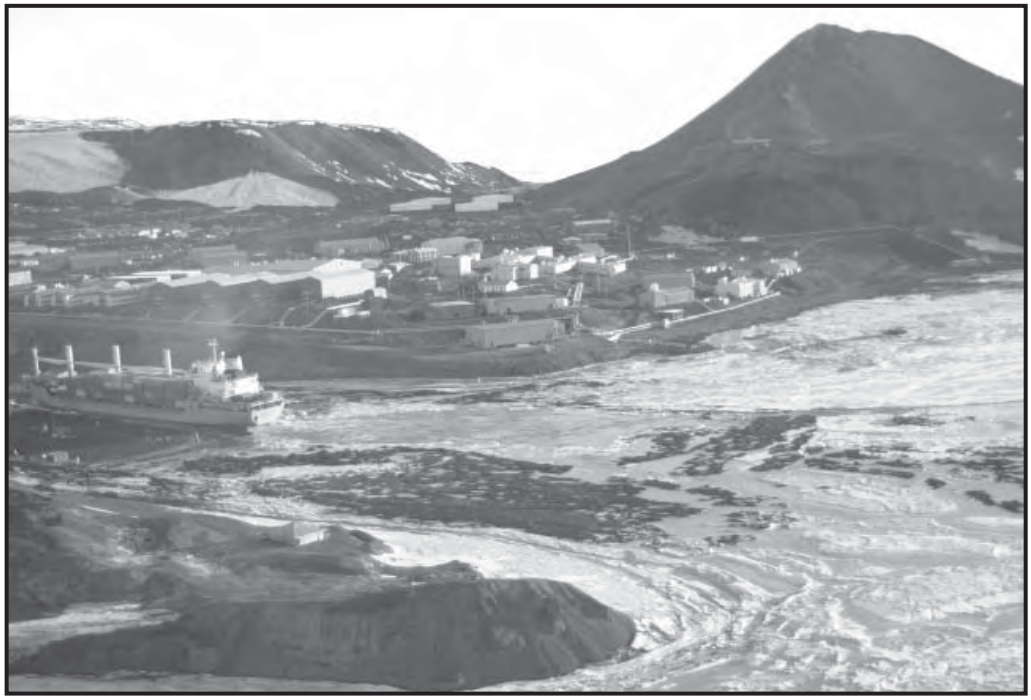
CHAPTER 7:

Stations and Ships



An aerial view of McMurdo Station, the largest research facility operated by the U.S. Antarctic Program.

Photo by Kristan Hutchison

The United States Antarctic Program has three permanent, year-round research stations and two research vessels. Additional temporary field stations are constructed and operated during the austral summer. As detailed previously in this book, participants are required to put safety and environmental protection first. Extra individual responsibility for personal behavior while living and working in Antarctica is also expected.

MCMURDO STATION

McMurdo (77°51'S, 166°40'E) is the main U.S. station in Antarctica. It is a coastal station on the barren low ash and lava volcanic hills at the southern tip of Ross Island, about 3,864 km (2,415 miles) south of Christchurch, New Zealand, and 1360 km (850 miles) north of the South Pole. The original station was constructed in 1955-1956. With many additions and modernizations over the years, today's station is the primary logistics facility for airborne resupply of inland stations and for field science projects. The station is also the waste management center for much of the U.S. Antarctic Program. Year-round and summer science projects take place at McMurdo. A 4,320 square meter laboratory, the Albert P. Crary Science and Engineering Center, was completed in 1994. Other facilities are maintained for various studies.

The mean annual temperature is –18°C (0°F). Temperatures may reach 8°C (46°F) in summer and –50°C (–58°F) in winter. The average wind is 12 knots, but winds have exceeded 100 knots.

Approximately 90% of U.S. Antarctic Program participants reside or pass through McMurdo Station. The austral winter population ranges from 150 to 200, and the summer population may exceed 1,100. The station is normally isolated from late February until early October, except for a

brief period in August when several closely spaced flights (known as WINFLY, for winter flights) deliver personnel, supplies, and early science parties.

McMurdo has three airfields that are used at different times for different reasons. The Annual Sea Ice Runway, located a few miles from McMurdo, operates from October to December and supports C-17, C-130, LC-130, and Twin Otter aircraft. The majority of U.S. Antarctic Program participants will arrive here. Williams Field Skiway, located on the Ross Ice Shelf approximately 15 kilometers from McMurdo, operates from December to February and supports LC-130 and Twin Otter ski-equipped aircraft. Pegasus White Ice Runway, located approximately 30 kilometers from McMurdo on the McMurdo Ice Shelf, is situated on glacial ice with several inches of compacted snow on top, known as "white ice." Pegasus White Ice Runway supports C-17, C-130, LC-130 and Twin Otter aircraft and is used for WINFLY deployment in August annually and from December-February each Season. McMurdo also has a heliport on the edge of town.

McMurdo Sound is an historic area. On his voyage of 1839-1840, James Clark Ross brought his ships Erebus and Terror into the sound before sailing eastward along the front of the great ice shelf that now bears his name. In 1901, Robert F. Scott wintered the Discovery in Winter Quarters Bay, adjacent to the station. A hut he built in 1901 still stands. Scott in 1901-1903 and 1910-1913 and Ernest Shackleton in 1907-1909 and 1914-1916 deployed their sledging parties from the area. Other huts used by these expeditions, at Cape Royds and Cape Evans, still stand and are open on a limited basis for tours.

An active volcano, the 3,794-meter Mt. Erebus, is a landmark. On the west side of McMurdo Sound, the Royal Society Range and an extinct volcano, Mt. Discovery, are spectacular vistas.

The booklet ***Recreational Walking Guide to Ross Island*** gives information on the history of the McMurdo Sound area.

The **Movement Control Center** (MCC) provides a terminal operations function for all continental cargo and passenger movements. MCC coordinates passenger manifesting and transportation to and from the McMurdo area airfields in addition to providing support with pallet building and airplane load planning. MCC personnel are also responsible for the loading and unloading of all fixed wing airplanes (Twin Otter excluded), as well as operating the McMurdo-area shuttle bus, taxi and courier services.

Housing at McMurdo Station is similar to college dormitories with a community bathroom down the hall in most dorms. Linens, blankets and pillows are provided, but a towel, slippers or shower shoes, and toiletry container are recommended. Participants are assigned at least one roommate. Roommate requests, including spouses or significant others, may not be honored for temporary McMurdo residents. Temporary residents are defined as RPSC employees staying fewer than 30 days and Grantees staying fewer than 15 days. Those transiting through McMurdo to the South Pole or field camps will be assigned to transient housing in the bunkroom or 4 to a room. Due to round-the-clock operations, roommates may arrive at any time of the day or night.

EMERGENCY

In an emergency, your family can get a message to you in Antarctica by calling RPSC headquarters in Denver (303.790.8606) or the NSF Office of Polar Programs in Washington, D.C., (703.292.8030). Explain that this is an emergency.

Diesel-driven generators provide **electrical power** at 120 volts, 60 hertz, the same as in the U.S. Reliability is good, but rare surges or outages could affect electronic equipment. Fresh water at McMurdo is made from sea water using reverse osmosis. Compared to taking it from a stream or a well, as we usually can do in the States, this is an expensive way to get fresh water.

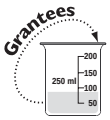
Telephone calls can be made 24 hours a day from dorm rooms that have phones. Remember to bring a calling card for personal calls. Charges for these calls originate in Denver, Colorado. In other words, if you are placing a call to New York City, the charges will reflect a Denver to NYC call. Business calls are made using an authorizing Personal Identification Number (PIN), assigned by your supervisor or, for grantees, the Crary Lab Supervisor. **Incoming calls** are restricted to USAP business.

Communication radios and pagers may be checked out through the communications

department on station for business use.

Fax machine. Fax machines are available for limited use with permission of your supervisor. Grantees can use the Crary lab fax machine whenever needed. A public fax machine is available in the store for a fee.

E-mail and Internet access is available 24 hours a day. Due to bandwidth limitations, recreational downloads via web or point-to-point file sharing programs are blocked.



Grantees: Computers and LAN drops for personal laptops are available in the Crary Lab's Telesciences area, which all grantees have access to at all times. (Grantees can also make dialup connections from their dorm rooms using their own laptops). Both Macs and PCs are available in the Telesciences area, as is a scanner, a color printer and an E-size plotter. Grantees can download and send files from any networked machine in McMurdo, but bandwidth limitations (912k shared by 1,000+ people) can result in slow Internet connections and file transfer speeds. All computers in the Crary lab have CD burners, and DVD burners are available on request. Grantees will be allocated blank CDs and DVDs as specified in their Research Support Plan. Digital camera card readers are available in Telesciences.

Streaming media is prohibited at McMurdo Station and field camps.

NOTE: McMurdo's bandwidth is overtaxed, making Internet connectivity extremely slow!

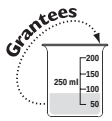
Mail. The post office at McMurdo offers all regular services (letter and package mail, money orders, stamps, etc.) and operates routine hours. It does not send COD mail. The post office only accepts U.S. cash and travelers checks. During the winter season it is closed because there is no transportation available. It does open during WINFLY.

Mail for WINFLY (mid-August) delivery should be sent after the first week in July or it will be returned. WINFLY transportation and space for parcel mail is limited. First priority is to wintering participants and then to those going to McMurdo during WINFLY. If there is not space available for your package it will be held in Christchurch until space allows during Mainbody (October).

Packages destined for summer participants should be mailed **after Labor Day** or they will be returned.

Your address in McMurdo will be:

McMurdo Summer and Winter - Grantees:



[your name]
McMurdo Station
Project [insert your #]
PSC 469 Box 800
APO AP 96599-1035

McMurdo Summer and Winter - RPSC Employees:

[your name], RPSC
McMurdo Station
PSC 469 Box 700
APO AP 96599-1035

There are 3 **television** channels and 2 **radio** feeds in McMurdo. Provided by American Forces Radio and Television Service (AFRTS), television offerings include live and taped news, sports and general entertainment programs. The radio stations combine popular music, news and local programming scheduled by volunteer DJs from the community. In addition, movies are programmed locally via cable television. Additional channels offer timely weather, transportation and other general community information. Many common areas are equipped with televisions and VCRs. Participants may wish to bring a small radio. A limited number of television sets are available via a lottery system for dorm rooms. A free video and DVD checkout library is operated by the Station Store.

There are **recreational facilities,** including a library, clubs, climbing wall/bouldering cave,

gymnasium, weight room, aerobics room, band room and bowling alley. Volunteers frequently organize art shows, chili cook-offs, running races, yoga classes, dances, league play, lessons, lectures, etc. CDs, musical instruments, cross-country skis and other items are available for rental.

Laundry facilities and detergent are provided at no charge for personal use in the dormitories. Participants are responsible for washing linens and clothing.

Chaplain services are provided by a military chaplain and New Zealand Catholic priests, who rotate on one month intervals. In addition to conducting regular worship services and religious programs, the chaplain accommodates all religious practices and is available for counseling, both religious and secular. The chapel program provides opportunities for volunteers to use their gifts in ministry and service.

Food service at McMurdo Station is cafeteria style. There is no charge for meals. Take as much as you want, but, to minimize cost and the waste McMurdo has to manage, eat all of what you take. After dining, if the room is crowded, please leave to make room for others. Arrange with the food service management for takeout meals for those ill or on duty. In addition to the regular three meals, in summer a midnight meal is served first to night workers and then the general population.

Photo by Peter Recjek

The Chalet at McMurdo Station houses the administrative headquarters for the station. Observation Hill can be seen in the background.

The **McMurdo Clinic** provides health care on a walk-in basis during posted hours, 6 days a week. Walk-in hours are extended during busy summer months to accommodate shift workers. Hours are posted at the entry and on the TV information scroll. For emergencies, staff can be reached 24-hours by calling the fire dispatch emergency number. The facility is equipped to handle a wide range of minor illnesses and injuries, and to stabilize critical patients for evacuation. Services include x-ray, laboratory, pharmacy and nursing. During the summer season, a dentist is available by appointment to cover most dental emergencies. Physical therapy is available by referral only, for rehabilitation of injuries on station. During the winter season, the physician has limited capability to treat and manage dental and rehabilitation needs.

All injuries should be evaluated at the clinic. The physician will determine whether a Worker's Compensation report should be filed, and provide information to the Safety Manager.

Vehicles at McMurdo are for official use only, not for personal or recreational use. They are assigned to grantees or work centers. If your assignment requires driving a vehicle you will receive training in proper use and preventative maintenance.

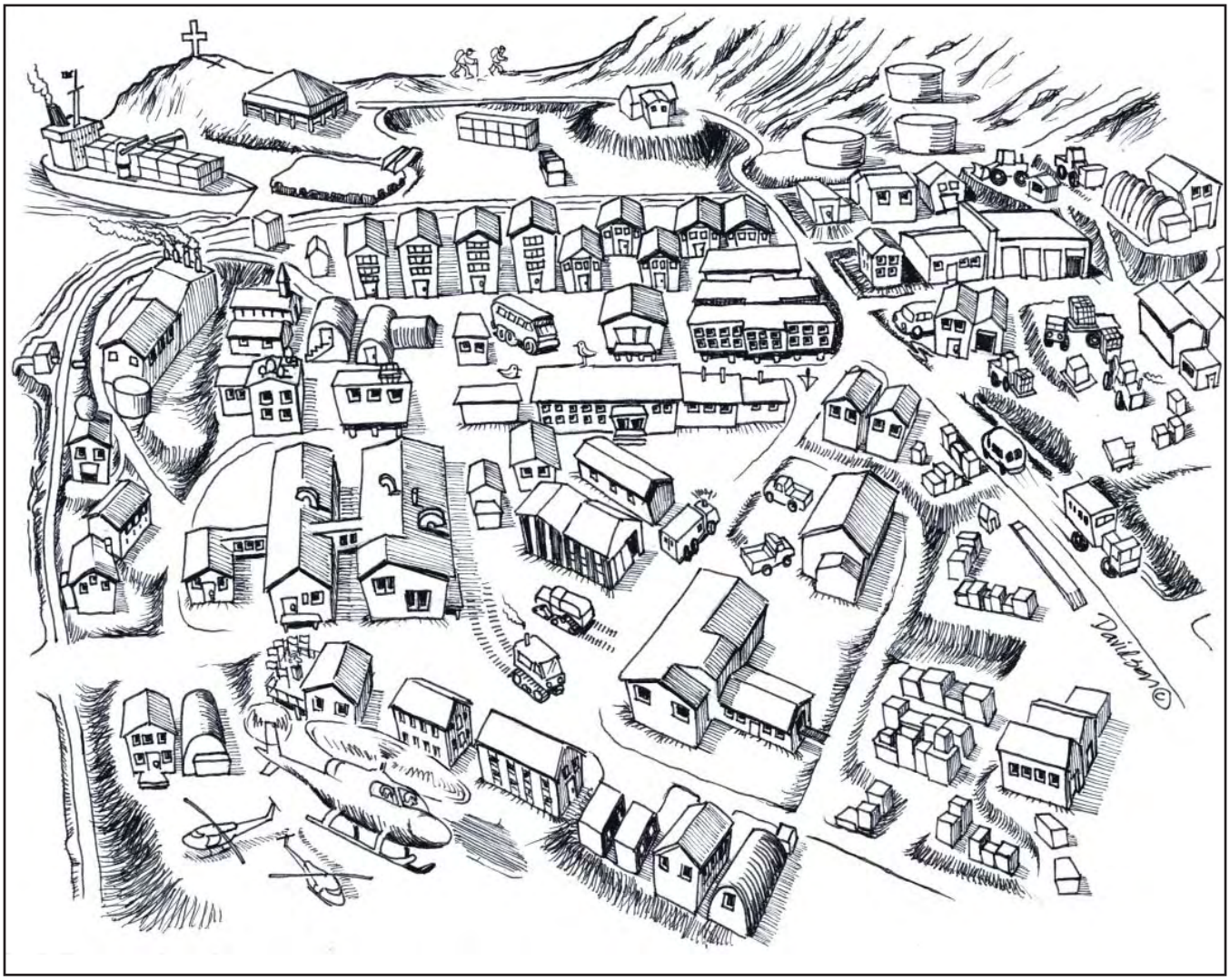
Trash. It is the responsibility of all persons to keep the station presentable by properly sorting and disposing of packing materials and other trash, which is recycled to the extent practical. By entering a U.S. antarctic station, you automatically consent to abide by local procedures prescribed for waste management. See Waste Management in this chapter for some of the rules. Other details will be provided to you.

Albert P. Crary Science and Engineering Center (CSEC). This research center at McMurdo Station was dedicated in November 1991. The laboratory is named in honor of geophysicist and glaciologist Albert P. Crary (1911-1987), the first person to set foot on both the North and South Poles. It is sometimes referred to as the Crary Laboratory.

The laboratory contains state-of-the-art instruments and equipment to facilitate research and to advance science, technology, and education. It contains personal computers and workstations, and a local area network. It primarily supports funded investigators by providing laboratory space, analytical instrumentation, and staging areas for a wide range of scientific disciplines.

The Crary Lab has five pods built in three phases to make 4,320 square meters of working area. Some of the rooms and labs contained in the Crary Laboratory are: telescience room, computer

McMurdo Station



room, conference rooms, lounge, analytical chemistry labs, general use labs, a storage/receiving and staging area, chemistry labs, microbiological labs, radioisotope lab, walk-in freezers, chemical storage, environmental rooms, field-party staging areas, electronics workshop, darkroom, ice and rock sectioning rooms, an aquarium and holding tanks, and offices.

The laboratory is managed with direction from the NSF and advice from the McMurdo Area Users Committee (MAUC). The RPSC Laboratory Supervisor ensures that operations comply with safety, environment, and health requirements. A chemical-hygiene plan is provided to users. The NSF urges users and visitors to take pride in the laboratory and to keep it clean and neat.

AMUNDSEN-SCOTT SOUTH POLE STATION

This station, at the geographic South Pole, is on the polar plateau at an elevation of 2,836 meters (9,306 ft). It is situated on a 2,700 meter (9,000 ft) thick plateau of ice. It is 850 nautical miles south of McMurdo. The station is drifting with the ice sheet at about 10 meters (33 ft) a year.

U.S. Antarctic Program personnel will reach the South Pole from McMurdo station via LC-130 airplanes, which only operate from late October through mid-February. The station is isolated the rest of the year. The original station was built in 1956-1957 and is now buried beneath the snow. The second station, located under a geodesic dome, was completed in 1975. The dome is scheduled to be dismantled in 2009. The new Elevated Station will officially be dedicated in 2007. The winter population has recently varied from 70 to 90, and the summer population averages 225.

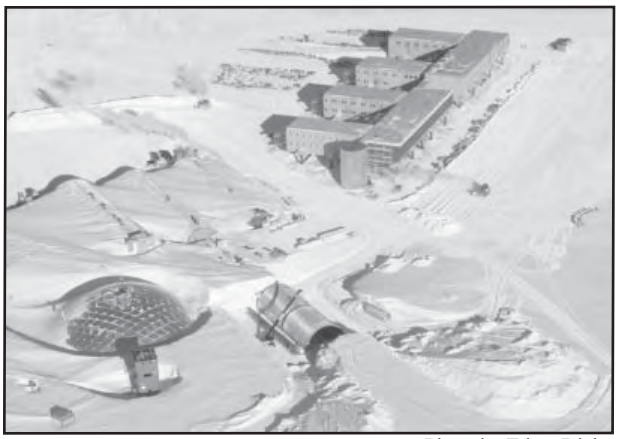


Photo by Ethan Dicks

An aerial view of Amundsen-Scott South Pole Station.

The mean annual **temperature** is –49°C (–56°F). Average monthly temperatures range between –28°C (–18°F) in the summer and –60°C (–76°F) in winter. The record high of –l3.6°C (7.5°F) was recorded in December 1978, and the record low of –82.8°C (–117°F) was recorded 23 June 1982. Precipitation is about 20 centimeters of snow (8 centimeters water equivalent) per year, with very low humidity. Drifting is the primary factor in accumulation of snow around the buildings. Average wind speed is 10.8 knots.

Research includes astronomy and astrophysics, aeronomy auroral and radio-science studies, meteorology, geomagnetism, earth-tide measurements, seismology and glaciology.

Telephone calls can be made from the South Pole during satellite coverage, currently 12 hours a day. Remember to bring a calling card for personal calls. Charges for these calls originate in Denver, Colorado. In other words, if you are placing a call to New York City, the charges will reflect a Denver to NYC call. Science, business and emergency related calls can be made with an Iridium phone during times of no satellite coverage. Incoming emergency calls must be routed through RPSC or the NSF.

Fax Machine. There currently is no fax machine service available at South Pole. Scanned images of documents are transmitted via e-mail to eFax, a company who in turn faxes the document to the recipient. For incoming service, faxes are sent to eFax, who then e-mails it to the Pole, where it is printed.

E-mail and Internet access is available only during satellite coverage, currently 12 hours a day.

Mail. South Pole has an official U.S. Post Office. However, it does not offer any registered services or sell money orders. Mail is placed aboard resupply airplanes and routed through McMurdo Station.

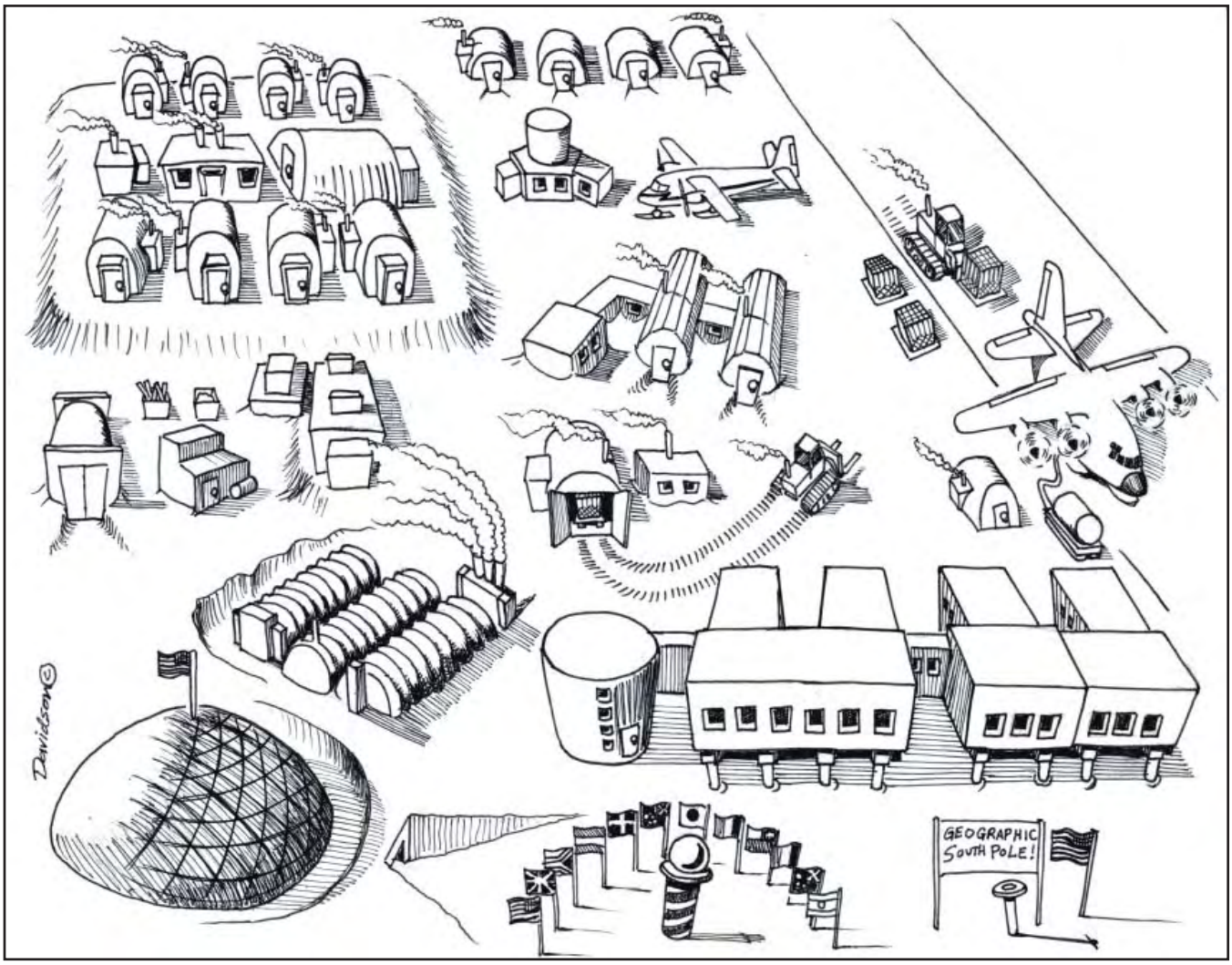
Packages destined for summer participants should be mailed **after Labor Day** or they will be returned.

Your address at South Pole (both summer and winter) will be:

[your name, Project # or RPSC]
South Pole Station
PSC 468 Box 400
APO AP 96598

Ham radio (amateur radio) connections are also available for calls to the United States. Schedules depend on volunteer operator availability and signal conditions but are usually announced. Calls are placed over the ham radio and patched into the phone system from the operator's location in the U.S. Charges will be for a collect call from the operator's location to the

Amundsen-Scott South Pole Station



party being called. Remember that these are not private conversations and some business discussions (banking, for example) are not permitted.

Meals. Food service at the South Pole is cafeteria style. There is no charge for meals. Take as much as you want, but eat all of what you take. Remember, every piece of food thrown in the garbage has to be flown out of Pole. Arrange with the food service management for takeout meals for those ill or on duty. In addition to the regular three meals, in summer a midnight meal is served first to night workers and then the general population. Volunteers provide assistance on special occasions.

Household duties (chores) are shared by all personnel on a rotating basis.

The Station Store stocks very limited supplies of toiletries and alcoholic beverages. A large variety and quantity of Antarctic and South Pole souvenirs are available for purchase. Only cash and travelers checks are accepted at the store.

ATMs are not available at the South Pole due to the limited satellite availability. RPSC employees are able to have funds taken out of their bi-weekly paychecks and obtain this money while on station. Grantees are able to cash up to $500 in personal checks at the store each month.

Credit card usage is not available.

Housing. Housing facilities at the South Pole are very limited. Many summer participants are housed in what is referred to as Summer Camp, which consists of Jamesways (canvas Quonset

Huts) and Hypertats (highly insulated modular buildings similar to Quonset Huts). Rooms are somewhat private and measure approximately 6x8 feet. Bathrooms and showers are available in three separate buildings (therefore, if you need to use the bathroom, you will need to put on your parka and boots to get there) and each has a male and female side. Rooms also are being used in the new elevated station. These rooms are generally single rooms with community shower and bathroom facilities for male and female. With three working shifts at South Pole during the summer, there is always someone trying to sleep. Please be aware of the noise level as courtesy and consideration is a must.

Water conservation at South Pole Station is critical. Participants are limited to 2 two-minute showers each week.

Laundry facilities and detergent are provided free of charge, but due to water conservation, participants are only allowed one load of laundry each week.

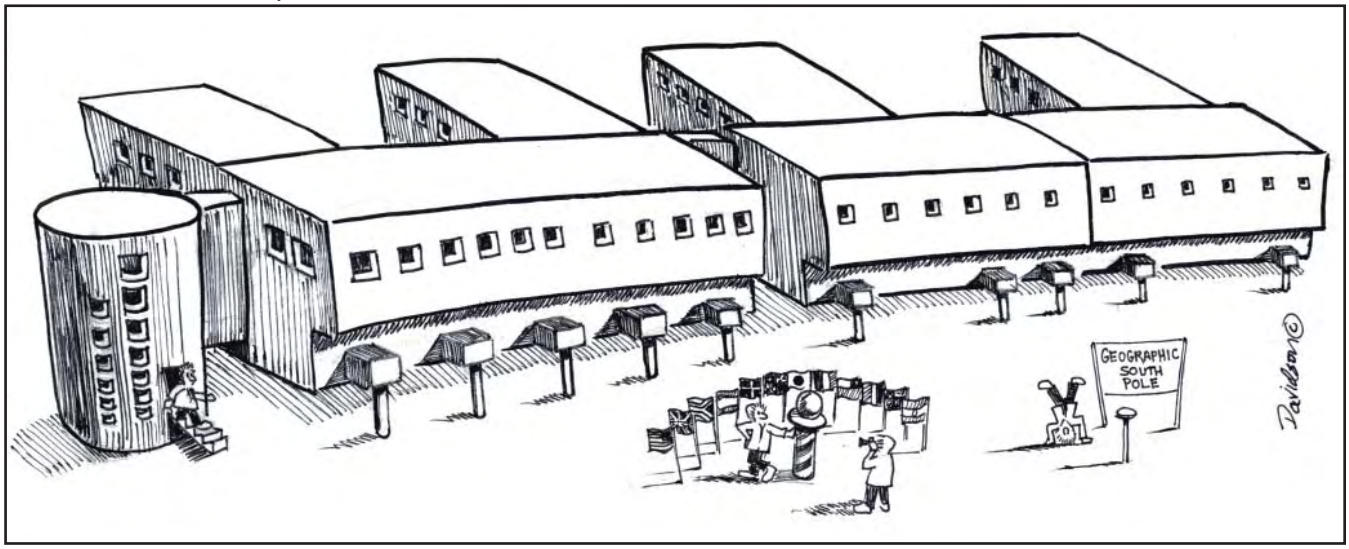
Recreational facilities. There is a large gymnasium, weight room, sauna, a small area dedicated to arts/crafts, and a music room.

A **physician,** with emergency dental training, is accessible on station at all times. Unless it is an emergency, please call the clinic in advance to ensure the doctor is available.

Altitude sickness. Amundsen-Scott South Pole Station is at a physiological elevation above 3,000 meters (10,000 feet). The flight from McMurdo doesn't allow time to acclimate en route. You should check with your doctor to see if living at the high altitude will affect any preexisting medical problem. A medicine called acetazolamide will be available at McMurdo Clinic. Treatment should begin 24 hours before leaving for the high altitude. This medicine is contraindicated for those allergic to sulfa medications. The signs of altitude sickness are shortness of breath that is not relieved promptly by resting, headache, dizziness, and difficulty sleeping. They can be minimized by avoiding strenuous activities the first two days, increasing fluid intake, stopping or limiting smoking, and avoiding alcohol and caffeine. Altitude sickness can occur as late as five days after reaching altitude, and occasionally, can progress to a serious medical condition requiring evacuation to a lower altitude. Anyone developing symptoms should see the local medical provider.

The South Pole Users' Committee (SPUC) provides RPSC with feedback and suggestions on staffing, facilities and the policies that guide South Pole operations. The SPUC may recommend improvements and suggest the relative priority of their recommendations of the South Pole Research site. Members (9) of SPUC represent the wide range of science activities at the South Pole Station, with particular emphasis on those activities with current or previous NSF/OPP support for research at South Pole Station.

Elevated Station, South Pole



PALMER STATION

Although the U.S. has had long historical ties to the Antarctic Peninsula, it did little work there until 1965 when a small biology facility, Palmer Station, was established. It is named after *Nathaniel B. Palmer*, the American sealer who pioneered exploration of the Peninsula area in 1820. In 1970 the new and current station was completed on Anvers Island, at 64°46'S, 64°03'W. The station, built on solid rock, consists of two major buildings and three small ones plus two large fuel tanks and a dock.

Ship access is usually year-round. Tour ships and sailing yachts visit frequently during the summer months. Palmer is not regularly served by airplane, and no permanent landing field is maintained there.

Wildlife at Palmer Station is abundant which makes it superbly located for biological studies of birds, seals, and other components of the marine ecosystem. It has a pier and facilities for the research vessels that support logistics and research in the marine sciences. It has a large and extensively equipped laboratory and sea water aquarium. Meteorology, upper atmosphere physics, glaciology, seismology, and geology have also been pursued at and around Palmer Station. The immediate vicinity is a dedicated Long Term Ecological Research (LTER) site. As with elsewhere in Antarctica, all interactions with wildlife are strictly governed by the Antarctic Conservation Act.

Photo by Rebecca Shoop

Palmer Station is the smallest of the three research stations operated by the U.S. Antarctic Program.

Station **population** is about 44 in the summer and 20 or more in winter. Unlike South Pole and McMurdo Stations, Palmer usually receives transportation year-round and does not generally have a distinctive period of winter isolation.

Housing at Palmer Station is similar to college dormitories with community bathrooms down the hall. Linens, blankets and pillows are provided. Participants are assigned a roommate. Washing machines, dryers and detergent are provided free of charge. There is also a sauna. Everyone participates in household duties, such as cleaning common areas.

Palmer's **climate** is milder than that of the other U.S. antarctic stations primarily because it comes under the influence of a polar-maritime air mass. The mean annual temperature is –3°C (27°F). Average temperatures range between 2°C (36°F) in the summer and –10°C (14°F) in the winter. The annual average wind is about 10 knots. Compared to other U.S. Antarctic Program stations precipitation is high, with ample rainfall. The water equivalent in snow and rain averages 81 cm (32 inches) per year.

Water conservation is encouraged but usage is not restricted.

Vehicles consist mainly of Zodiac boats, snowmobiles and all-terrain vehicles.

Training is required before participants are allowed in Zodiacs on the water. Depending on your position you may be required to complete Boating I, Boating II, or The Islands Course which covers the location of survival caches, signaling, radio operations, survival skills, cold water immersion, etc.

Science. The science resources at Palmer Station are managed with direction from the NSF, which includes input from the Palmer Area Users Committee (PAUC). It is the responsibility of the RPSC Manager of Laboratory Science to ensure that operations comply with safety, environment and health requirements. All users are provided with a chemical hygiene plan. The NSF urges users and visitors to keep the laboratory spaces clean and safe.

There is no live **TV** or **radio,** but videos and DVDs are available for viewing in the lounge.

Telephone calls can be made from Palmer Station 24 hours a day. Remember to bring a calling card for personal calls. Charges for these calls originate in Denver, Colorado. In other words, if you place a call to New York City, the charges will reflect a Denver to NYC call. Friends and family can contact you via the station's main number which also originates in Denver: 720-568-2775.

Fax machines are available for limited use with permission from your supervisor.

E-mail and Internet access is available 24 hours a day.

Mail. There is no APO service available to South America or Palmer Station. The station has no post office, but accepts and distributes letters and packages. Mail reaches Palmer Station on each southbound vessel, about once a month. Friends and family should send letters about 2 weeks in advance of the ship's scheduled departure from Punta Arenas. Package mail sent through Port Hueneme should be mailed at least 8 weeks ahead of the scheduled departure. Please contact your Point-of-Contact for shipping deadline information.

Flat/Letter Mail (first class mail and magazines) and Small Parcels (less than 2 lbs.) should be sent to the RPSC office address.

Small parcels must include a detailed packing list on the outside of the box before they can be forwarded to the station. The packing list should include a list of contents and estimated value along with contact information for the sender. Parcels will be forwarded to the station on a space-available basis and may be forwarded to Port Hueneme for shipment if they exceed the size limits. Since packages travel through customs in the U.S. and Chile, it is possible that they'll be opened in transit.

your name]
[Palmer Station or Vessel Name]
c/o Raytheon Polar Services Company
7400 S. Tucson Way
Centennial, CO 80112-3938

Package Mail should be sent to Port Hueneme for shipment via the USAP Cargo System. Package mail may be sent to the U.S. Antarctic Program cargo facility in Port Hueneme, California, for delivery to Punta Arenas, Palmer Station, or the research vessels. This method is relatively inexpensive, but **cannot be used for letter mail** (use the Denver office method). Packages sent via Port Hueneme may require two months or longer for delivery to Punta Arenas because packages are sent surface shipment on commercial vessels.

Packages sent via Port Hueneme become international cargo and are subject to the applicable laws and regulations which govern these shipments. These regulations are numerous and require that shipments be certified as hazardous or not. Packages cannot be sent without a declaration of contents and value. You must provide a packing list on both the inside and outside of each package. Failure to provide accurate packing lists will result in rejection of the package and its return to sender.

Your packing list must show the following information:

1. Sender's name and address
2. Final destination of the package (your name and location)
3. Itemized list of the contents and their value

There are two addresses for Port Hueneme depending on the shipping method:

Via the US Postal Service:

NSF Contractor Representative
P.O. Box 338
Port Hueneme, CA 93041
Forward to:
[Your Name]
[Palmer Station or Vessel Name]

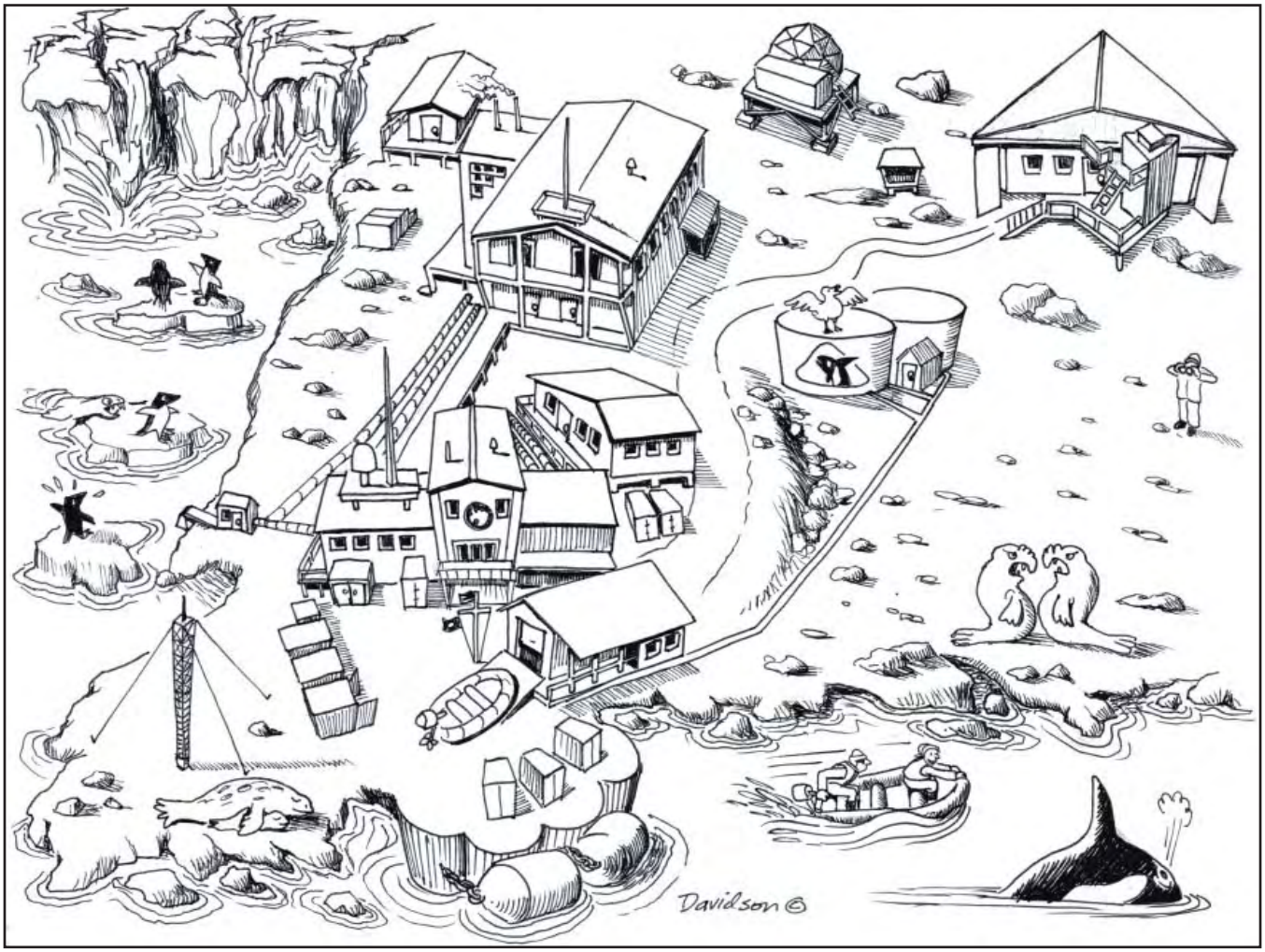
Via Other Carriers (FedEx, UPS, DHL, etc.):

NSF Contractor Representative
Building 471 North End
USN-CBC
Port Hueneme, CA 93043
Forward to:
[Your Name]
[Palmer Station or Vessel Name]

NOTE: If you are placing **catalog or Internet** orders to be shipped to the station, use the appropriate address above and send an e-mail to Port Hueneme letting them know that the package is coming. This will avoid confusion and delays in shipment. Your message should include the vendor name, package contents, your name, final destination and tracking numbers (if known). E-mail: PH-Cargo-Ops@usap.gov

Flat and Package Mail can be shipped directly to Chile via Chilean Postal Service, how-

Palmer Station



ever this method can be **unreliable and very slow.** Mail can be forwarded to the station or vessels or it can be held for you in Punta Arenas depending on how it is labeled. The address is:

[Your Name] Palmer Station, Antarctica
c/o AGUNSA
Deposito Franco Antarctico
Av. Independencia 772
P.O. Box 60-D
Punta Arenas, Chile

A **physician,** with emergency dental training, is accessible on station at all times. Unless it is an emergency, please call the clinic in advance to ensure the doctor is available.

Meals are prepared by a cook and assistant. Clean-up is done on a rotating schedule by all Palmer Station residents.

Recreation opportunities are available. There is an exercise room with weights and cardio machines. There is also a self-service bar, a TV lounge, billiard and ping pong tables, etc. There are some arts and craft supplies available as well as a limited selection of cross-country skis and snowshoes. The station also has a small darkroom that can be used for recreation. Boating (after training has been completed) is available as weather permits and is a popular way to enjoy the wildlife in the area.

A small **Station Store** stocks a limited supply of toiletries, souvenirs and beverages.

RESEARCH VESSELS

The ***R/V Nathaniel B. Palmer*** *(NBP)* began science operations in late 1992 when it sailed from Punta Arenas, Chile, in support of the Russian-United States Ice Camp Weddell. Since then, the 94-meter *NBP* has sailed more than 100 science cruises and is now into its second long-term charter in support of USAP marine science research.

Photo by Al Hickey

The research vessel Nathaniel B. Palmer *is an ice-breaking ship used for scientific research by the U.S. Antarctic Program.*

The *NBP*'s main engines provide a total horsepower of 12,700. This rating, along with hull strength and other criteria, combine to qualify it for classification by the American Bureau of Shipping (ABS) as an ABS Maltese Cross A1, Maltese Cross AMS, Ice Class A2, icebreaker (able to break 3 feet of ice at a continuous forward speed of 3 knots). A modern multi-disciplinary research vessel, the *NBP* has six laboratories totaling 353.5 square meters. It can accommodate 39 scientists and RPSC crew on cruises as long as 75 days.

The *NBP* has worked in many areas of the Southern Ocean, including the Ross and Weddell Seas, the Bransfield Strait, and has completed two circumnavigations of Antarctica in support of USAP research projects.

The ***R/V Laurence M. Gould (LMG)***, completed in December 1997 as a replacement for the *R/V Polar Duke*, began its service in Antarctica on 16 January 1998. Since then, the *LMG* has sailed in support of more than 70 science cruises. This ABS Maltese Cross A1, Maltese Cross AMS, Ice Class A1, 70.2-meter ship, has an available horsepower of 4,576 in open water operations and 3,900 horsepower during operations in ice. The A1 rating classifies the *LMG* as being capable of breaking one foot of first-year ice while maintaining continuous forward progress. Like the *NBP*, this vessel has an endurance of 75 days and a range of 12,000 nautical miles at 12 knots.

The *LMG* works primarily in the Antarctic Peninsula region, transporting support and scientific personnel and cargo to and from Palmer Station and supporting research throughout the peninsula area. Voyages are also made farther afield, including the Weddell Sea.

Both vessels are equipped with an enclosed Baltic Room, a diverse sonar suite, a specially designed aquarium room, moon pool, and an uncontaminated seawater system delivering water to several labs. The *NBP* seawater supply is also available on the 03 Level's Helo Deck.

Both the *NBP* and *LMG* are owned and operated by Louisiana-based Edison Chouest Offshore (ECO) and were built by North American Ship Building, a subsidiary of ECO located in Larose, Louisiana.

Living conditions on the research vessels include two-person cabins; private toilets and showers are available in each cabin. Each ship has laundry facilities, exercise rooms, and TV lounges with DVDs and videos. Cafeteria-style meals are provided. Be aware that travel on the U.S. Antarctic Program research vessels often involves passing through some of the roughest seas in the world. If you are prone to motion sickness or have never sailed before, consult with your personal physician for the appropriate medication before you leave home.

E-mail is available on both ships and is sent and received at least twice daily. The message size and the use of the attachments in e-mail from the vessels are limited and there is no Internet connection available while at sea. Please consult your point-of-contact for the current vessel e-mail policy.

Telephone service via the Iridium satellite phone system is available for personal use via reasonably priced Iridium calling cards that can be purchased once onboard. INMARSAT is also available 24 hours a day-but at a high cost (approximately $5 a minute). Personal calls via INMARSAT must be placed using a credit card.

Mail to participants on the research vessels can be routed through the husbanding agent (AGUNSA) in Punta Arenas. Please consult the mail information described under Palmer Station

to find appropriate mailing addresses. For cruises originating in New Zealand or elsewhere, please consult your point-of-contact for mailing instructions.

For more information, go to http://www.usap.gov/vesselScienceAndOperations

FACILITY ADMINISTRATION

The National Science Foundation (NSF), a federal agency, plans, funds, manages, and coordinates the U.S. Antarctic Program in accordance with U.S. Government policy.

The Department of Defense (U.S. Air Force, Air National Guard, Army, Military Sealift Command, and Air Mobility Command) and the Department of Homeland Security (Coast Guard) provide logistics, as requested by the NSF, on a reimbursable basis. The NSF contracts with Raytheon Polar Services Company (RPSC) for station operating support services, science support services, operation of the research ships, for facilities planning and construction, and logistics services.

Senior U.S. Representative in Antarctica. The Director of the National Science Foundation has designated the Office Director, Office of Polar Programs, as the Senior U.S. Representative in Antarctica, or SUREPA. During the austral summer operating season, the Office Director sometimes designates ranking officials of the U.S. Antarctic Program to serve as Senior U.S. Representative in Antarctica. The official designated is normally located at McMurdo Station during the summer operating season. The Senior U.S. Representative ensures that U.S. policy and directives for the U.S. Antarctic Program are implemented, represents the U.S. as it interacts with foreign nations in Antarctica, ensures that U.S. sponsored antarctic activities are carried out consistent with the Antarctic Treaty, and takes appropriate action in personnel matters not subject to military or other authority. At McMurdo, the SUREPA's office is located in the NSF Chalet.

NSF Representative, Antarctica. The NSF Representative, Antarctica, is on the continent throughout the austral summer and is the Foundation's principal representative for implementing the planned field operations. He/she coordinates and establishes on-site priorities for field support of U.S. Antarctic Program activities, coordinates the supervision and direction of the NSF contractor's efforts at McMurdo and the inland sites, and serves as an NSF spokesperson. The NSF Representative has an office located in the Chalet at McMurdo Station.

NSF Science Representative. The NSF Science Representative, Antarctica, the Foundation's principal representative for antarctic science activities, interacts with investigators and the NSF Representative to set science-support priorities, give on-site direction to the RPSC laboratory services manager on science matters, and serve as the NSF science spokesperson. The position is occupied by different NSF science program managers over the course of the summer. At McMurdo Station the NSF Science Representative has an office in the Albert P. Crary Science and Engineering Center.

NSF McMurdo Station Manager. The NSF McMurdo Station Manager is a year-round position at McMurdo whose function is to oversee operation of station facilities. The manager interacts with all organizations represented at McMurdo. In winter, the NSF manager is the ranking U.S. Government official at McMurdo.

Commander Joint Task Force Support Forces Antarctica (CJTF SFA). The commander of Department of Defense support forces in the U.S. Antarctic Program. The CJTF SFA is located at Hickam Air Force Base, Hawaii.

500th Air Expeditionary Group Commander (500 AEG/CC). The 500 AEG Commander is the designated commander of LC-130 and C-17 personnel positioned in Antarctica and New Zealand.

NSF Representative, Antarctic Peninsula. The NSF Representative, Antarctic Peninsula, is resident at Palmer Station or aboard research vessels during a part of the austral summer. This person coordinates U.S. activities in the Peninsula area.

NSF Representative, South Pole is resident at South Pole Station during a part of the austral

summer. This person coordinates U.S. activities at South Pole Station.

RPSC Area Director/Station Manager. RPSC has an Area Director/Station Manager at McMurdo, South Pole, and Palmer Stations during the austral summer. This person, in conjunction with the Senior RPSC Representative, oversees all contractor support activities. The RPSC Winter Site Manager serves in this role during the winter months.

Station Science Leader. The National Science Foundation designates a science leader for U.S. Antarctic Program stations. The Station Science Leader is directly responsible to the Office of Polar Programs when no NSF Representative is on the continent. Researchers at each station, or working out of the station, are responsible to the Station Science Leader, who coordinates science projects and arranges for the logistics needed to support them. Researchers request support from the Station Science Leader during the winter, who consults with the NSF McMurdo Station Manager (at McMurdo) or the Station Manager (at South Pole or Palmer Stations) to arrange the support. The Station Science Leader clears official messages concerning research projects before dispatch.

RPSC Winter Site Manager. This position is responsible for all station support activities including local support for science projects. At McMurdo Station, the NSF Station Manager is designated as the senior official on station. At South Pole and Palmer, the Winter Site Manager and support personnel maintain the station and support the research projects. In an emergency, the Winter Site Manager is in complete charge of everyone at the station.

Marine Project Coordinators are provided by RPSC on both the *R/V Nathaniel B. Palmer* and the *R/V Laurence M. Gould*. RPSC provides Marine Projects Coordinators (MPC) on both vessels, who coordinate and direct shipboard activities in conjunction with the Ship's Master. The MPC and the Ship's Master make all decisions regarding the safe conduct of the ship.

User Committees. RPSC convenes an annual McMurdo Area User Committee (MAUC), a South Pole User Committee (SPUC), an Antarctic Research Vessel Oversight Committee (ARVOC) and a Palmer Area User Committee (PAUC) to review the effectiveness of the various Antarctic laboratories. These committees review input collected from grantees, NSF representatives, RPSC Laboratory Managers, etc., to assess safety, environment and health requirements, space allocation, scheduling, equipment status, staffing, communications, computing and to plan operational requirements for the coming season. ■